AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A demodulation method of demodulating an I channel signal and a Q channel signal obtained from a PSK modulated signal comprising:

a skew detection step of detecting an orthogonal skew from a first signal on the I channel side and a second signal on the Q channel side to be inputted into a carrier reproduction circuit; and

a skew correction step of correcting one of the first signal and the second signal based on the orthogonal skew and outputting the corrected signal to the carrier reproduction circuit.

2. (Currently Amended) A demodulation method comprising:

an orthogonal detection step of detecting an I channel signal and a Q channel signal from a PSK modulated signal;

an amplitude difference comparison step of calculating a difference between the I channel signal and the Q channel signal to be inputted into a timing reproduction circuit;

an amplification step of amplifying either signal of the I channel signal or the Q channel signal by means of a gain based on the difference calculated at the amplitude difference comparison step; and

an extracting step of extracting a signal at timing in synchronization with a base band signal based on the amplified I channel signal or the amplified Q channel signal output by the amplification step and the I channel or the Q channel not amplified by the amplification step.

3. (Previously Presented) A demodulation apparatus for demodulating an I channel signal and a Q channel signal obtained from a PSK modulated signal comprising:

a skew detection unit for detecting an orthogonal skew from a first signal on the I channel side and a second signal on the Q channel side to be inputted into a carrier reproduction circuit; and

a skew correction unit for correcting one of the first signal and the second signal based on the orthogonal skew and outputting the corrected signal to the carrier reproduction circuit.

4. (Original) The demodulation apparatus accordingly to claim 3;

wherein said skew detection unit includes an area judgment unit which judges the symbol of the first signal and the second signal is positioned which of the plurality of specified areas where the symbols are positioned in an IQ space according to the amount of phases of the PSK modulation system,

wherein codes of the skew signals are inverted according to the judged result of said area judgment unit.

5. (Currently Amended) A demodulation apparatus comprising:

an A/D conversion unit which converts an I channel signal and a Q channel signal, which are obtained from a PSK modulated signal by orthogonal detection, into digital signals so as to output sample signals of both the digital signals;

a timing reproduction unit which extracts the sample signals of the I channel signal and the Q channel signal outputted from said A/D conversion unit with timing in synchronization with a base band signal so as to output sample signals;

an amplitude difference comparison unit which calculates a difference between the I channel signal and the Q channel signal;

a filter unit which smoothes a signal representing the difference calculated in said amplitude difference comparison unit; and

an amplification unit which amplifies either signal of the I channel signal or the Q channel signal by a gain according to the signal outputted from said filter unit, wherein

the timing reproduction unit extracts a signal at timing in synchronization with a base band signal based on the amplified I channel signal or the amplified Q channel signal output by the amplification step and the I channel or the Q channel not amplified by the amplification step.

6. (Previously Presented) A demodulation method according to claim 1, wherein the skew detection step of calculating symbol amplitudes from the first signal on the I channel side and the second signal on the Q channel side so as to output difference between a calculated symbol amplitudes and a predetermined reference amplitude as skew signals.

7. (Previously Presented) A demodulation method according to claim 1, further comprising:

a sine wave generation step of generating a plurality of orthogonal sine waves based on the orthogonal skew.

8. (Previously Presented) A demodulation method according to claim 1, wherein the skew correction step of multiplying the first signal and a first skew correcting coefficient determined based on the orthogonal skew so as to obtain a first multiplied result, and multiplying the second

signal and a second skew correcting coefficient determined based on the orthogonal skew so as to obtain a second multiplied result, and inputting a result obtained by adding the first multiplied result to the second multiplied result into said carrier reproduction circuit.

9. (Previously Presented) A demodulation method according to claim 7, wherein the skew correction step of multiplying a first skew correcting coefficient determined based on one of the two sine waves and the first signal so as to obtain a first multiplied result, and multiplying a second skew correcting coefficient determined based on the other one of the two sine waves and the second signal so as to obtain a second multiplied result, and inputting a result obtained by adding the first multiplied result to the second multiplied result as new second signal into said carrier reproduction circuit.

10. (Previously Presented) A demodulation apparatus according to claim 7, wherein the carrier reproduction unit extracts an I channel signal and a Q channel signal from the corrected signal and one of the first signal and the second signal

11. (Previously Presented) A demodulation apparatus according to claim 3, wherein the skew detection unit calculates symbol amplitudes represented by the first signal and the second signal so as to output difference between a calculated symbol amplitudes and a predetermined reference amplitude as skew signals.

12. (Previously Presented) A demodulation apparatus according to claim 3, further comprising:

a sine wave generation unit which generates a plurality of orthogonal sine waves based on the orthogonal skew.

13. (Previously Presented) A demodulation apparatus according to claim 3, wherein the skew correction unit multiplies the first signal and a first skew correcting coefficient determined based on the orthogonal skew so as to obtain a first multiplied result, and multiplying the second signal and a second skew correcting coefficient determined based on the orthogonal skew so as to obtain a second multiplied result, and inputting a result obtained by adding the first multiplied result to the second multiplied result into said carrier reproduction circuit.

14. (Previously Presented) A demodulation method comprising:

receiving a PSK modulated signal;

detecting orthogonally a first signal on the I channel side and a second I signal on the Q channel side from the PSK modulated signal;

detecting an orthogonal skew between the first signal and the second signal; and

correcting one of the first signal and the second signal based on the orthogonal skew.

15. (Currently Amended) A demodulation apparatus comprising:

an orthogonal detector for detecting an I channel signal and a Q channel signal from a PSK modulated signal;

an amplitude difference comparator for calculating a difference between the I channel signal and the Q channel signal to be inputted into a carrier reproduction circuit;

an amplifier for amplifying either the I channel signal or the Q channel signal by means of a gain based on the difference; and

a timing reproduction unit for extracting a signal at timing in synchronization with a base band signal based on the amplified I channel signal or the amplified Q channel signal output by the amplification step and the I channel or the Q channel not amplified by the amplification step.

16. (Previously Presented) A demodulation method comprising:

an orthogonal detection step of detecting an I channel signal and a Q channel signal from a PSK modulated signal;

an amplification step of amplifying either the I channel signal or the Q channel signal;

an amplitude difference comparison step of calculating a difference between an amplified I channel signal and the Q channel signal or between the I channel signal and an amplified Q channel signal; and

an extracting step of extracting a signal at timing in synchronization with a base band signal based on either the amplified I channel signal and the Q channel signal or the I channel signal and the amplified Q channel signal, wherein

the amplification step uses a gain difference calculated by the amplitude difference comparison step.